

ALTERNATIVE CERTIFICATION FOR SCIENCE TEACHERS: POLICY AND CONTEXT

Yijie Zhao

University of Massachusetts, Amherst

Paper presented at the National Association for Research in Science Teaching annual conference, April 4 – 7, 2005, Dallas, Texas

Abstract

Alternative teacher certification has become a proliferating phenomenon in the United States in response to current and projected widespread teacher shortages. The growth of alternative certification, while rapid, has not been systematic and there is little agreement on how to define, structure and ensure quality control across a diverse array of programs. In the course of nearly 20 years of implementation of alternative certification, the policy landscape has been dominated by a myriad of definitions and programs, intense debate about the professional legitimacy of the solution, and mixed, inconclusive and even contradictory research in terms of the effectiveness of such programs. Although the projected severe nationwide teacher shortages have not materialized in general, such shortages do exist in specific localities and specialties, indicating that teacher distribution rather than production is the issue. Nevertheless, despite the endeavor to solve the generic teacher production problem at the macro level, alternative teacher certification has been criticized for having fallen short of addressing teacher distribution and retention at the micro level, that is, in most hard-to-staff schools in urban and rural areas and in high-need subject areas, such as mathematics and science, English as a second language, bilingual education, and special education, and for teachers of color and male teachers. Given the complexity of issues, the continued growth, and the on-going investment of public resources associated with alternative teacher certification, a comprehensive, in depth and systematic descriptive analysis is needed to help evaluate the effectiveness of the policy in addressing teacher supply and demand, teacher production and distribution. Therefore, the purpose of this paper is to identify key features and issues relating to alternative certification for science teachers as the basis for suggesting a more systematic approach to the study of the policy efforts.

Introduction

Alternative teacher certification has become a proliferating phenomenon in the United States.

In 2003, 46 states and the District of Columbia report having a total of 144 routes other than the traditional approved college teacher education program route for certifying elementary and secondary teachers; an estimated 200,000 people have been certified to teach through alternative routes since 1985 with approximately 25,000 people per year within the last five years having been certified to teach through these routes (<http://www.ncei.com/>).

The Federal government has entered the field by appropriating \$41.65 million in the 2003 fiscal year budget, which is \$6.65 million more than that in 2002, for a Transition to Teaching program to assist mid-career professionals to be certified as elementary and secondary teachers. In addition, the Congress passed the Elementary and Secondary Education Act (ESEA) legislation in December 2001 that authorized \$3.175 billion for fiscal year 2002 and “such sums as may be necessary for each of the 5 succeeding fiscal years” for providing qualified professionals from other fields with alternative routes to teacher certification (<http://www.ncei.com/>).

While regular teacher certification refers to public school teaching credentials acquired by completing a state-approved program at an institution of higher education, the terms “alternative certification” and “alternative licensure” apply to a variety of options outside of a full-time, four- or five-year teacher preparation program for obtaining the state credentials required to teach in public schools (Feistritzer & Chester, 2002).

The rationale for alternative teacher certification has developed in response to projections of widespread teacher shortages due to

- increasing student enrolments,
 - increasing teacher retirements,
 - class-size reduction, which requires more teachers,
 - new teachers leaving the profession in the first few years
- (www.recruitingteachers.org),

although broad shortages have not occurred (Feistritzer, 1997).

Other reasons for alternative teacher certification becoming such a pervasive phenomenon include the prospects of

- recruiting bright and promising college graduates into teaching who do not follow traditional certification routes,
- lessening reliance on emergency certifications,
- breaking the monopoly of traditional teacher certification programs, but allowing outsiders, such as foundations and corporations, to influence teacher preparation policy,
- encouraging deregulation of teacher preparation (Fenstermacher, 1990),
- meeting the needs of urban schools and students that traditional teacher certification programs fail (Haberman, 1992).

The articulated goals of alternative teacher certification are (Shen, 1998a; www.edexcellence.net):

- To diversify the teaching force and increase the participation of under-represented teachers by recruiting more male and minority people into the teaching force.

- To reduce the teacher shortage and increase the teaching pool in urban and rural school districts, and in certain subjects such as mathematics and science.
- To improve the quality of the teaching force by recruiting persons who are brighter than the average traditionally certified teachers and who have had a broader range of experiences outside of teaching.
- To decrease the need for emergency credentialing to meet teacher shortages.

Nearly 20 years has passed since the first alternative teacher certification was implemented in the state of Texas in 1985. However, research results on the implementation of this policy initiative are mixed and inconclusive. For example, Shen (1998a) concluded that at the national level alternative certification policy fulfilled its promise in helping diversify the teacher pool by attracting higher percentage of minority teacher into teaching in comparison to traditional certification programs, but Legler (2002) claimed that “alternative certification has had little impact on the diversity of the teaching force in the Midwest” (p. 10).

This paper focuses on interpretations, expectations, accomplishments, and pros and cons of alternative teacher certification. This review of the overall picture serves as the basis for analyzing assumptions embedded in this policy endeavor with reference to the policy context so as to examine the ways in which the policy has fulfilled its purposes.

It starts with the rationale for understanding and analyzing the policy issue in question, which is followed by a review of the policy context, i.e., teacher, especially science teacher, shortages with reference to changes of demographic and socio-economic features of student population, and situations in rural and urban areas, and a description of alternative teacher certification in terms of its differentiated definitions, various programs, intense debate, and mixed research results.

I. A Theoretical Framework to Study Alternative Teacher Certification

The theoretical framework to the study of the alternative teacher certification phenomenon is the concept of “situation-specific” or “situative perspective” approach to teacher learning and teacher education. This starting point is based on the analogous assumption that if the way in which teachers are prepared is a manifestation of the covert values, attitudes and beliefs of the program designers, the way in which one understands and interprets the policy issue in question reflects his or her educational views and philosophies.

Being a teacher involves acquiring and then redefining a socially legitimated identity (Coldron & Smith, 1999), which is a “complex, multidimensional and dynamic system of representations and meanings which develops over time as the result of interactions between the person and an environment” (Kelchtermans and Vandenberghe, 1994, p. 47). This environment in the context of American public schooling is uneven distribution of a multicultural student population, unequal distribution of resources in urban, suburban, and rural settings, and an unstable public teaching force, to name but a few. With reference to some typical urban school characteristics in the United States (which are elaborated in the following section), Oakes, Franke, Quartz & Rogers (2002) stated that successful teachers in low-income urban, multicultural schools “need to understand local urban cultures, the urban

political economy, the bureaucratic structure of urban schools, and the community and social service support networks serving urban centers” (p. 228); and an effective urban teacher should be committed to “equity, access, and democratic participation” so that “the social, dynamic, and generative quality” (p. 229) of teacher learning can be situated within “the larger context of urban schools and communities” (p. 230). Logically, since schooling is not a generic process, effective teacher preparation should be “situation-specific” (Haberman, 1992, p. 17), so that teachers not only stay in teaching but provide instruction that translates into quality student learning. Although Oakes et al. (2002) focused on urban schools, the concept of “situation-specific” training of teachers should have a generic application to teachers in general.

A similar concept called “situative perspective” was explored by Putnam & Borko (2000) in relation to the implications for teacher learning and teacher education. They identified three conceptual themes central to the situative perspective: cognition is “(a) situated in particular physical and social contexts; (b) social in nature; and (c) distributed across the individual, other persons, and tools” (p. 4). “Cognition as situated” means that “how a person learns a particular set of knowledge and skills, and the situation in which a person learns, become a fundamental part of what is learned” (p. 4); “cognition as social” emphasizes that “interactions with the people in one’s environment are major determinants of both what is learned and how learning takes place” (p. 5), and the community changes as well through the ideas and ways of thinking that its new members bring to the discourse; “cognition as distributed” cannot happen in a school environment that focuses on individual competencies and decontextualized skills, but in an environment where learning and cognitive performance is shared. Greeno and colleagues (1996, p. 20, cited in Putnam & Borko, 2000) wove these themes together in characterizing the situative perspective:

Success in cognitive functions such as reasoning, remembering, and perceiving is understood as an achievement of a system, with contributions of the individuals who participate, along with tools and artifacts. This means that thinking is situated in a particular context of intentions, social partners, and tools.

Whether it is “situation-specific” training or a “situative perspective”, both concepts indicate the importance of the interaction between a broad social context and the individual. The implication for teacher learning is that, as a social being, teachers are socially constructed rather than defined by a theoretical cluster of variables, such as age, race, gender, class and educational attainment/qualifications. Taking issues of equity and survival of public schooling into consideration, Zumwalt (1996) suggested that there should be a shift from asking how we get people certified and how we get enough certified teachers to how we can ensure that all students have qualified teachers to meet their needs and have equitable learning opportunities. Chappelle and Eubanks (2001) echoed that the core of the debate should be on the effectiveness of an alternative certification program in preparing its candidates to teach in today’s classrooms rather than on the concept itself. This advocacy for quality rather than quantity of teacher preparation requires policy makers and teacher educators alike to re-think about who the ultimate targeted audience is that the teacher education system, alternative and traditional, is serving.

Obviously if teacher preparation is to have any impact on the candidates' teaching, the approaches/methodologies adopted in a training program must mirror the realities and demands of teaching. If the alternative teacher certification policy is to have any impact on teacher supply in general and science teacher supply in particular, the formulation of the problem and implementation of the solution must take into account its contextual tapestry of various strands, such as demographic features of the student population, the public teaching forces and the science teacher candidate pool.

II. The Policy Context

Using the “situative perspective” concept as the rationale for the selection of scenarios within a broad policy landscape, the policy context review is for the purpose of examining whether there is any mismatch between the problem of inadequate supply of qualified science teachers and the solution of alternative teacher certification. In other words, the contextual analysis is to explore the “situative” manifestations of the supply and demand of public school teachers in general and science teachers in particular.

2.1 Teacher Supply

A “qualified” teacher in the United States can refer to someone who gets a bachelor’s degree in education, and can also refer to someone “who has gone through a college education program approved by the state department of education which has the authority to then confer a license to teach” (Feistritz & Chester, 2002, p. 10). Based on the latter definition, only a third of fully qualified teachers nationwide are actually teaching the following year. Meanwhile, some 20 percent of all new hires leave the profession within three years, and in urban districts, nearly 50 percent of new teachers leave the profession within the first five years (National Education Association, 2002, 2003). 75 percent of current teachers have a bachelor’s degree in education, and the rest have a bachelor’s degree in a field other than education (Feistritz & Chester, 2002). The projected shortage of qualified teachers is based on enrolment increases, increased retirements of teachers, teacher attrition, and class size reduction (Feistritz & Chester, 2002). However, researchers agree that severe, nationwide shortages of teachers exist in specific subjects and in regions that are considered less desirable to live and work; therefore, teacher shortages are viewed as an issue of distribution rather than production (e.g., Darling-Hammond, 1999, 2000a, 2000b, 2000c, 2002; Darling-Hammond & Sykes, 2003; McDiarmid, Larson, & Hill, 2002; Ingersoll, 2001, 2003; Feistritz & Chester, 2002). For instance, regarding regions of teacher shortages, there is a balanced teacher supply in general in the Northwest, Northeast, Great Lakes and Middle Atlantic states alongside teacher shortages in Rocky Mountain, Alaska, Midwest, West and the South (AAEE, 2003), while student enrollments are projected to increase in the Midwest, West and the South but decrease in the Northeast (NCES, 2004); in terms of high-need subject areas, 57 percent of public school science teachers lack a major or certification in their field (www.recruitingteachers.org). In short, teacher supply/shortage is a context- and subject-specific issue.

Teacher shortages are distributed unevenly depending on localities and specialties (www.recruitingteachers.org). It is particularly acute in urban and rural areas, for high-need

subject areas such as mathematics and science, English as a second language, bilingual education, and special education, and for teachers of color and male teachers. There are some interactions between localities and specialties as well. “In 1993-1994 only 8% of public school teachers in wealthier schools taught without a major or minor in their main academic assignment—compared with fully a third of teachers in high-poverty schools” (Darling-Hammond & Sykes, 2003, p. 17). Hard-to-staff schools actually experience shortages even in specialties for which a surplus of licensed teachers (e.g., qualified English teachers) exists (McDiarmid, et al., 2002). Hence teacher supply or teacher shortage is far more complicated than what the semantic meaning suggests.

Based on data drawn from the two most recent cycles of the Teacher Followup Survey (1994-95 and 2000-01), Ingersoll (2003) unpacked teacher shortage and used the term “teacher turnover”, which entails teacher attrition and teacher migration. Teacher attrition refers to teachers leaving the profession altogether (the leavers); teacher migration refers to teachers transferring or moving to different teaching jobs in other schools (the movers). Studies on teacher shortage usually focus on teacher attrition assuming that teacher migration does not affect overall teacher supply. Nevertheless, it is a serious problem for certain types of schools to be staffed with qualified teachers. Thus both teacher attrition and teacher migration are the contributing factors to uneven distribution of teachers, and they are the major reasons for increased demand for teachers, rather than student enrollment and teacher retirement, which only accounts for 13% of total turnover, 25% of leavers (Ingersoll, 2003, p. 3). The math/science teacher shortage serves as an example.

Although more new teachers are produced than needed, there is a shortage of mathematics and science teachers (Darling-Hammond & Sykes, 2003; Ingersoll, 2003). The turnover rate for math/science teachers is higher than that for teachers in a number of other fields, and the turnover rates for science teachers (15.6%) are among the highest in any fields, but the reasons why they depart from their teaching jobs, according to Ingersoll (2003), do not greatly differ from other teachers. “A large proportion indicate they depart for personal reasons (34% of migration and 44% of attrition), and a large proportion also report they depart either because they are dissatisfied with their jobs or in order to seek better jobs or other career opportunities (40% of math/science teachers and 29% of all teachers)” (p.6). After controlling for school type, reasons for both teacher migration and attrition include low salaries, student discipline problems, little support for new teachers, and little faculty input into school decision making. Schools with these characters tend to lose teachers to those without these problems (Ingersoll, 2003). Despite the fact that there are certain factors that obviously policies cannot reach to retain teachers, such as teacher departure because of personal reasons, how can alternative teacher certification address the other problems, such as low salaries and little school support for new teachers, which exist in those schools losing teachers?

Teaching represents 4% of the entire nationwide civilian workforce, and has relatively higher turnover rates than other occupations. “The sheer size of the teaching force combined with the relatively high annual turnover of the teaching occupation means that there are relatively large flows in, through, and out of schools each year” (Ingersoll, 2003, p. 3). The instability of staffing, which does not apply to all schools and districts, not only causes problems for

school administration, but also affects student learning. Teacher turnover, the driving force for demand for new teachers, indicates that generic teacher recruitment policies and strategies alone, in certain schools and districts, will not solve their school staffing problems without the issue of teacher retention adequately addressed in a context-sensitive way. Thus the conclusion seems to be that the core of the problem is not exclusively teacher supply/shortage, but includes the other side of the coin – teacher demand.

2.2 Teacher Demand

As mentioned above, teacher turnover is a context-specific phenomenon. Ingersoll (2003) elaborated on this point. He described that schools across the country with significantly lower levels of teacher turnover bear the reverse characteristics of those that tend to lose teachers. That is, schools that have higher teacher retention rates are those where there is more support from the school administration for new teachers, such as induction and mentoring programs, with higher salaries, fewer student discipline problems, and enhanced faculty input into school decision-making. This part is intended to examine why and where these strategies and conditions for teacher recruitment and retention cannot be available.

Since students are the ultimate clients that the public education system is intended to serve, this section focuses on characteristics of the student population, that is, their demographic features and enrollment distribution, and students' access to qualified teachers in hard-to-staff urban and rural areas.

2.2.1 Demographic Features of the Student Population

Hodgkinson (2002) summarized some major demographic features of future American student population and posed some challenges for teacher preparation. Future population growth in the United States in the next 20 years continues to be uneven, with 61% increase in Hispanic and Asian population. As the current distribution shows, “10 states will contain 90% of the Hispanic population, 10 will contain 90% of the Asian population, and 7 will do both. Half of all Mexican Americans live in California”, and “most of this increased diversity will be absorbed by only about 300 of our 3,000 counties” (p. 102). As student population becomes increasingly racially diverse, however, the teaching force is becoming increasingly White, due to the decline in minority teacher enrollments in teacher education programs since 1990 (Hodgkinson, 2002).

Regarding children living in poverty, Whites make up the largest *number*: 9 million, compared to 4 million Blacks and 4 million Hispanics, but minorities make up the highest *percentage*: about 38%, compared to 18% of Whites (Hodgkinson, 2002). What is not mentioned, however, is the information of the educational expenditure features of the schools where these children in poverty are accommodated.

According to Census 2000, there is a major increase in children whose sole support comes from grandparents (about 2 million), in unmarried couples of both sexual orientations with children, and in single fathers, although the number and percentage of single mothers are declining slightly, as are those of single mothers with more than one child. Only a little more

than half of the school students come from two- (biological-) parent homes (Hodgkinson, 2002). It is found that the number of parents with whom a child lives is strongly associated with the financial, sometime, emotional resources available to the child and to the overall well-being of the child. Children who live with single parents are substantially more likely to have family incomes below the poverty line than children who live with two parents. They are more likely to suffer from academic problems (Cunningham, 2003).

The United States is a nation of mobility. Those states with the most transience, such as Texas, Florida, California, Georgia, Arizona, and Nevada, are “the worst performing states in terms of the percentage of 19-year-olds who have both graduated from high school and been admitted to a college” (Hodgkinson, 2002, p. 103).

All these factors - uneven distribution and growth of student population of different ethnicity, high percentage of minority children in poverty, changes in family structures, and high family mobility with high student transience - have posed unprecedented challenges to teacher education policy makers and other stakeholders. If schools are to accommodate students of various ethnic, cultural, demographic and socioeconomic background, they not only need the support of local communities, but have to provide qualified teaching and administrative staff that share the cultural characteristics of the students and can empathize with them, which leads to the demand for teachers who are prepared for such specific contextual scenarios.

In addition to the diversity of the students’ demographic features described above, uneven student enrollment distribution makes the demand for teachers more dynamic and complex.

2.2.2 Distribution of Student Population

The demand for teachers is by no means uniform across the nation (Holmes, 2001). “Large inner cities have huge school districts that oversee many very large schools that enroll high proportions of students from many racial/ethnic groups and from high poverty areas” (Feistritz & Chester, 2002, p. 9):

There are approximately 88,000 public schools in 15,000 school districts that employ 2.6 million teachers throughout the nation.

- One fourth of the students are enrolled in urban schools.
- Another fourth of the students are enrolled in small schools in rural areas where the likelihood of hiring a physics major to teach one physics class a day is remote.
- One in five (3,123) school districts enroll fewer than 300 students each. Nearly half of them (7,004) enroll fewer than 1,000 students each and account for just 6.3% of all the students enrolled.
- On the other hand, 216 out of the 14,883 (1.5%) school districts enroll 25,000 or more students each and account for nearly one third of all the students.
- School size also varies enormously. Forty-one percent of school districts enroll fewer than 400 students each but account for nearly one third of all the students.
- At the high school level, only 3% of all secondary schools enroll 1,500 students or more each, but they account for one third (33.3%) of all high school students.

Such variations in student population density across school districts and the nation pose great challenges to policymakers for students' equal access to material, financial and human resources, for their equal opportunities of receiving education of high quality and relevant to their lives. The policy making process must address educational equality as well as equity in a context-specific manner so that scarce public resources can be put to optimum use without any particular group of students being marginalized.

In the background of the diverse demographic features and uneven distribution of the student population nationwide, students in urban and rural schools, which account for half of the total student population, stand out in relation to the type of teachers in demand corresponding to the characteristics of the students and the physical context.

2.2.3 Teacher Demand in Urban Schools

In comparison with their suburban counterparts, urban schools have a higher percentage of minority students (Follo, Hoerr & Vorheis-Saregent, 2002). "There are approximately 12 million low-income children and youth in the 120 largest school districts in America", but little is done to prepare and secure effective teachers for these children in poverty except for teaching them "the lowest levels of reading and computational skills" (Haberman, 1992, pp. 15-16). Some researchers asserted that there is a mismatch between a homogeneous White middle class teaching force and a diverse student population in terms of cultural, linguistic, demographic and socio-economic features (Villegas & Lucas, 2002; Hodgkinson, 2002). For example, teachers of middle class life experiences tend to engage low-income urban children in classroom activities that make little sense to them and the result is poor teaching (Follo, et al., 2002). Consequently, such a mismatch can be a serious barrier to effective instruction and can be detrimental to enable every child in an urban school to achieve his or her potential (Gay, 2002; Howard, 1999; Harry, Kalyanpur and Day, 1999).

Some other researchers emphasized the qualifications of the teaching staff in urban schools. For instance, Ingersoll (1996) observed that children in high-poverty schools were significantly more likely to be taught by unqualified teachers (teachers teaching core subjects who did not have at least a minor in the subject they were teaching) than those in low-poverty schools. Fideler & Haselkorn (1999) criticized staffing central city public schools with the "least qualified" teachers as "a form of affirmative action in reverse" (cited in Fox & Certo, 1999, p. 11). Although alternative certification policies are expected to alleviate the acute demand for teachers in urban schools because traditional forms of university-based teacher education have turned out to be irrelevant to meet the needs (Haberman, 1992), some researchers claim alternative certification is a strategy for failure which allows uneven qualifications within the teaching force of school districts (Darling-Hammond, 2001; Holmes, 2001).

This argument for qualified teachers in urban schools is not an illegitimate concern, but it may lead to a causal relationship between teacher qualifications and teaching quality, and in turn, students' learning, with contextual factors eliminated from the teaching and learning process. The qualification-oriented view of teacher preparation indicates that the

interdisciplinary gap between demographic studies and education has become a “gray area” for educators and educational policy makers when addressing teacher supply and demand. When the quantitative supply and the qualitative demand for teachers form a mismatch, it creates a domino effect for future teacher supply and exacerbates the teacher demand situation. The following case serves as an example.

When studying why minority students in urban schools avoid choosing teaching as a career, Gordon (1994) pointed out that cultural and community concerns rather than social and economic status of the teaching profession itself, such as low status and low pay, drive potential minority teacher candidates away from the teacher pool.

“Lower-income students are either told that they cannot afford college or they are tracked into programs that match their parents’ vocations. Middle-class children of color are told that they should strive for a career other than teaching given that their chances of teaching in low status urban schools are great. Parents who have struggled and perhaps not survived formal schooling steer their children away from education seeing it as the source of their present predicament. Parents who see education as avenue out of poverty and low-status pressure their children to move into high status professions away from community and service occupations” (p. 351)

It is clear that the schooling experience of the former generation(s) influences how they perceive public education and the teaching career; it is also apparent that some teachers/schools regard the educational system as a tracking instrument, which may be a realistic interpretation of the essence of schooling, rather than empathize with the students and inspire them to explore their potential, which may be an ideal version of what education is for and what type of teachers these students really need.

Gordon (1994) also listed some negative experiences that minority teachers themselves had in schools, such as lack of adequate academic preparation, poor counseling, teachers’ lack of adequate preparation to work with students from diverse background. Thus the supply and demand for minority teachers may form a vicious cycle: unpleasant schooling experiences in combination with unfavorable concerns about the teaching career from communities and parents of different cultural and socio-economic backgrounds discourage minority students from coming into teaching, which, in turn, makes the chance of more minority students being taught by qualified teachers who share their culture and community characteristics become slimmer. Su (1996) reiterated this point. Because of lower levels of academic achievement upon entry into the university, fewer urban high school students are able to achieve the required entry GPAs by the beginning of their senior year, which results in reduced pool of prospective teachers from urban schools, and increasing demand for teachers in urban schools.

Even if the social and economic status of the teaching profession became more favorable, the situation would not have fundamental changes. With the increasing uniformity of teacher preparation curriculum (Morey, Bezuk, & Chiero, 1997) that both teachers of color and white teachers go through, and considering that most teachers of color from middle class

background are removed from the realities of inner city public schools (Grant, 1989), the concept of minority teachers for minority students is far more complex than the quantitative representation of teachers of color in the teaching force. Research has shown that the match between teacher and student race has little correlation to students' performance (Ehrenberg, Goldhaber, & Brewer, 1995). Thus understanding the link between representation of minority teachers and effective urban teaching is not enough to address the issue of urban teacher recruitment and retention, despite the alternative teacher certification policy effort to diversify the teaching force.

While urban districts are struggling to staff their schools for low-income multicultural student population, rural schools are faced with the challenges of small student enrollment and fiscal constraints.

2.2.4 Teacher Demand in Rural Schools

The American Association of School Administrators (1999) has observed that the main problem of rural school districts is attracting and retaining quality teachers especially in the subject areas of math, science, and special education. However, recent research on rural teacher recruitment and retention is lacking, and much of it has been conducted outside the United States. For instance, Murphy & Angelski (1996/1997) studied teacher mobility in a rural British Columbia school district, and found that the principal reason teachers leave rural communities is isolation - social, cultural, geographical and professional.

In addition to isolation, the job itself as a rural teacher is a multi-task. Due to sparsely distributed student population, in a rural school the teacher

- is to teach more than one subject or grade level,
- is to teach students with a wide range of abilities in the same classroom,
- is prepared to supervise extracurricular activities, and
- can adjust to the community (Lemke, 1994; Stone, 1990).

Regarding attracting teachers, many rural school districts are fiscally strapped, and generally poorer than their urban and suburban neighbors, because they often have low property values and minimal sales tax bases to support their efforts (Alexander, 1990). This lack of capital puts rural school districts in a disadvantageous position when they compete for qualified teachers.

Some implications for teacher certification policies in remote rural areas may be that quantitative increase of teacher supply by no means ensures that teachers will go and stay where they are most needed, geographically and by specialization; that trade offs in relation to teacher personal concerns should be taken into account when state and district policymakers design recruitment incentives and strategies; that some context-specific programs are needed to help the local residents move towards teacher certification. With reference to recruiting rural teachers, one major advantage is that most rural teachers were raised close to where they now teach (Menlove, 2003); therefore, they share with their students rural backgrounds, personal and educational experiences that predispose them to live in rural areas. The emphasis on background and experience is especially crucial for racially

or culturally distinct communities (McDiarmid et al., 2002). Some teacher preparation programs, whether traditional or alternative, could be designed for this particular audience. The question is how such a program should be designed, and by whom, so that the approaches and content can be relevant to the local realities while in the meantime without the students being cut off from the world beyond the rural setting.

Although the general phenomenon of teacher shortage is one of the targets that alternative teacher certification is designed to improve, the literature shows that the contextual aspects which define “highly qualified” teachers are often filtered out by succinct and simplified policy terms used to describe teacher supply and demand, teacher efficacy, preparedness and performance. Without considering the demographic and socio-economic characteristics of the students served, communities where they reside, and patterns of public spending on education, solving the problems of teacher shortages and upgrading teaching quality by merely increasing the quantity of teachers, would be like an effort to build a mirage. When policymakers and teacher education programs are oblivious of the contextual impact on the teacher supply and demand equation, those hard-to-staff schools end up becoming a revolving door through which they lose their teachers to those wealthier schools at geographically desirable locations and with a demographically more homogeneous student population. Thus the teaching context plays a pivotal role in the effectiveness of any policies attempting to address issues related to teacher supply and demand, including the policy of alternative teacher certification.

III. Alternative Teacher Certification

Alternative teacher certification (AC) is a complex phenomenon. It not only has a significant impact on how teachers are educated and brought into the profession (Feistritzer & Chester, 2002), but has become a catalyst for debates centering upon interpretations of teacher shortages, “highly qualified” teachers, and nature of teaching and teacher education. However, research on the effect of alternative teacher certification programs is “limited” and research findings are very often “mixed” (Wilson, Floden & Ferrini-Mundy, 2002, p. 198). This section centers upon the variety of AC programs, the differentiated definitions of the term, intense debate involving different parties, and mixed and inconclusive research results due to the variety of samples and research methodologies used in the study of this phenomenon.

3.1 Alternative Certification Programs

Alternative teacher certification may be generally defined as any significant departure from the traditional undergraduate route through teacher education programs in universities and colleges (Oliver and McKibbin, 1985). Licensing of public school teachers in the United States is a state responsibility, and there is a myriad of alternative teacher certification programs across the states with variations regarding program objectives, duration, content, training approaches, characteristics of teacher candidates, and certainly program effectiveness. For example, some alternative programs are traditional teacher education programs in a different package delivered at night for working adults; others are college-based programs for teachers hired with emergency certificates to complete certain amount of

coursework; still others are “fast-track” programs providing accelerated entry for prospective teachers to move through the basic curriculum quickly into classroom teaching (Huling-Austin, 1986; Feistritz & Chester, 2002).

There are various forms of alternative teacher certification programs at national, state, and local levels, although prospective teachers have to meet the specific certification requirements of the particular state. At the national level, programs focus on preparing a particular type of candidates for teaching, such as recent, high-achieving college graduates (e.g., Teach for America). State programs, such as Massachusetts Institute for New Teachers (MINT), typically focus on statewide shortages as well as building a diverse pool of candidates. District-run programs tend to focus on specific shortages, often in urban areas (e.g., Los Angeles Unified School District’s alternate route).

There are also alternative teacher certification programs designed for substantially different population of candidates from that of traditional teacher preparation programs (Huling-Austin, 1986), such as career switchers (e.g., the teacher education program at Bank Street College of Education), for paraprofessionals to become teachers (e.g., programs for paraprofessionals in SREB states), for new college graduates to enter teaching after graduation (e.g., Attracting Excellence to Teaching in Massachusetts). The vast majority of these programs are designed for candidates who already have a bachelor’s degree, who are employed as teachers while earning a regular teaching license as a result of completing the program. It is claimed that alternative teacher certification programs serve candidates “who will most likely be placed in teaching positions that are difficult-to-staff for any of a variety of reasons” (Huling-Austin, 1986, p. 52).

Based on a state-by-state analysis of alternative certification programs, Feistritz and Chester (2002) classified them into 11 categories (see Appendix) and summarized that the term “alternative teacher certification” “historically has been used to refer to every avenue to becoming licensed to teach, from emergency certification to very sophisticated and well-designed programs that address the professional preparation needs of the growing population of individuals who already have at least a bachelor’s degree and considerable life experience and want to become teachers” (p. 3).

Despite such an effort of program categorization to simplify the complicated scenario and to keep “consistency in reporting and analyzing what is going on in the field of alternative teacher certification” (Feistritz and Chester, 2002, p. 27), since the classification criteria center upon the requirements and processes of certification in different states, there is no information of what the “professional preparation needs” are, how they are perceived, and by whom; except for that two categories of programs describe their targeted audience as “talented individuals” (p. 27), there is no revelation of the requirements that teacher candidates should have “considerable life experience”. Above all, the classification system yields little insight into the policy context of the wide range of discrepancies between and among the programs, but may rather create a self-fulfillment prophecy when it comes to analyzing and evaluating the effectiveness of these programs, since a hierarchy of qualities of these programs is embedded in the list. Furthermore, there is no indication of what kind of student population the programs are intended to serve through preparing a particular cohort

of teacher candidates. A more context-based approach to program classification might be more informative to policymakers, researchers, and school districts for policy modification, program evaluation, and teacher recruitment.

AC Programs can be categorized in various ways as mentioned above according to their physical characteristics, which, however, fail to reveal the fact that the term “alternative certification” carries different meaning to different people. The complexity of the alternative teacher certification phenomenon is far beyond the physical characteristics of the programs, such as durations, participants, training approaches, and programs goals, but rather an issue with multi-facets.

3.2 Definitions of Alternative Teacher Certification

Although Feistritz and Chester (2002) contributed a comprehensive working definition, the term “alternative certification” itself is inherently problematic. Roth (1986) distinguishes between “alternate” and “alternative” route programs, with the former defined as a program for an individual with a bachelor’s degree *“only if fully certified personnel are not available”*, while the latter indicating a *“choice”* that a school district makes of “hiring an individual who is fully certified or hiring an individual without teacher preparation” (p. 1). While Roth’s semantic distinction has policy implications, Dixon and Ishler (1992) delve into the differentiation between “alternative routes to certification” and “alternatives to certification” and the underlying beliefs about the role of pedagogy in teacher education. They posited that “alternative routes to certification” recognizes the need of providing non-traditional educational opportunities for culturally diverse students to be pedagogically prepared, while “alternatives to certification”, on the other hand, indicates that teaching is an innate ability and pedagogy is rather some surviving tools in the classroom.

Obviously, how the term is defined is not a word puzzle played by academics, but an issue reflecting ideological beliefs, pedagogical implications, and political agendas. These multiple dimensions are manifested in the intense debate of the legitimacy of alternative teacher certification. As Hawley (1990) stated, alternative certification is “evidence of the relative political strength of the opponents and proponents of the art and craft view of teaching and the intensity which these parties bring to the debate” (p. 5). What should be added to this comment or made more explicit is that alternative teacher certification is also evidence of the moral grounds where the opponents and proponents stand in the context of multicultural unevenly distributed student population with diverse needs and wants that a generic engineering process of teacher preparation is not able to meet. The pros and cons of alternative teacher certification in the following present the “evidence” of each side.

3.3 Pros and Cons of Alternative Certification

Both proponents and opponents of alternative teacher certification seemingly just focus on how teachers should be trained. Proponents are dissatisfied with the exiting teacher preparation system, while opponents are concerned about the de-professionalization of teaching.

Proponents of alternative certification claim that traditional teacher preparation programs have failed to attract academically talented individuals to teaching, and failed to solve the problem of teacher shortages. For instance, Goldhaber and Brewer (2000) found that students of traditionally prepared teachers performed at least as well as students of teachers with emergency certificates, which implies that the traditional route is not necessarily the only way to raise students' achievement. Supporters also point to research showing that alternatively certified teachers remain in the classroom for at least as long as or longer than traditionally prepared teachers (Feistritzter, 2000). Thus, other pathways to teaching are necessary for introducing competition and breaking the monopoly of traditional teacher certification (Bliss, 1990; Roth, 1986). Proponents also assert that career changers, recent retirees, and individuals with degrees in fields other than education are important resources for schools and districts struggling to fill vacancies, and these accomplished professionals from other fields help drive the status of teaching upwards (Feistritzter, 2000).

Opponents of alternative certification describe it as an amateur approach to teaching that is unable to monitor the quality of the candidates (Wise, 1994). They posited that this policy reflects the teaching as a craft point of view. That is, there is minimal knowledge base distinctive to teaching; anyone who has the subject knowledge can learn how to teach on the job, without going through teacher preparation, without pedagogical knowledge, and without the development of reflection processes; that it is a shortcut for states and districts to "fill vacancies in any way possible" (Berry, 2000); that schools, rather than schools of education, are in the role to provide the needed mentoring and supervision (Bradshaw 1998; Darling-Hammond 1990; Marchant, 1992; Neumann, 1994; Tom, 2000; Zumwalt, 1996). With reference to the last point, Zumwalt indicated that "alternative certification" is rather an oxymoron, assuming that "the very school staffs that have been criticized for not meeting the needs of students have the time, energy, resources, and competences to meet the needs of unprepared or minimally prepared novice teachers" (Zumwalt, 1996, p. 42). Regarding alleviating teacher shortages, Ingersoll (2001) stated that with 39% of new teachers leaving the classroom within five years, filling vacancies with new teachers will not, in and of itself, solve the problem.

Whether teaching is an art or a craft is not the real focus of the debate. These intellectuals should know that "craft involves keen analysis and measured decisions" (Tom, 1987, p.13), that teaching as "craft" "gave due recognition to the element of experiential knowledge" (Wallace, 1991, p.15), and that part of teacher development is knowledge and skill development, which increases teacher's confidence and their ability to improve students' achievements (Hargreaves and Fullan, 1992). What is beneath the surface of the debate on teaching as an art or a craft is who should prepare teachers for today's classroom, who should take the responsibility for educating the nation's future generation, what should be done to ensure that every child has equal access to education of high quality without always falling guinea pig of a new teacher using their school as a revolving door, in what role schools should be cast in a society of diversity and inequity. The following debate between Darling-Hammond (2000) and Ballou and Podgursky (2000) has made the ethical aspect of alternative teacher certification more explicit.

There are two factions regarding teacher preparation: the "deregulators" who advocate an

open market approach, and the “regulators” who favor reform of the existing system (Education Commission of the States, 2000; Goldhaber and Brewer, 2001; Cochran-Smith and Fries, 2001). Ballou and Podgursky (2000) frame the problem of teacher preparation in terms of an open market approach to educational policymaking. Through the Government Union Review (1997) and Chester Finn’s Thomas B. Fordham Foundation (1999), they accused the National Commission of Teaching and America’s Future (NCTAF) of promoting the interest of the “education producers” at the expense of the welfare of the public by proposing changes regarding teacher preparation and licensure. The accusation is based on the “misrepresented” research that NCTAF cited to support its claims in their reports on teacher education reforms.

According to Darling-Hammond (2000), however, the open market approach advocated by Ballou and Podgursky that “administrators select teachers from the open market and evaluate them according to student scores”, while objects to the idea that states have an obligation to equalize access to school resources, would only continue and exacerbate inequities of students from different racial and socio-economic backgrounds in access to material, financial and human resources and, in turn, would continue and exacerbate disparities regarding learning outcomes between advantaged and disadvantaged students. Supported by the Carnegie Foundation and the Ford Foundation, the NCTAF frames “the problem” of American teacher education in terms of democratic values (Engle, 2000; Earley, 2000; Labaree, 1997) and calls for standards-driven improvements in teacher education and professional development in order to guarantee a well-qualified teacher for every American school child (Darling-Hammond, 2000).

Although Darling-Hammond (2000) and Ballou et al. (2000) debate about the research based evidence, its misrepresentation and misreporting, the implied message is rather about the policies, politics and ideologies of teacher preparation, distribution and teacher education preferred and upheld by the different interest groups they represent. An interesting, if not ironical, point in the case of Darling-Hammond vs. Ballou and Podgursky is the “misrepresentation and misreporting” of research based evidence. The truth is that in the field of alternative teacher certification, with different interpretations of the term “alternative certification”, a variety of programs in existence, and intense debate, mixed and conflicting research results are just one ingredient added to the complexity of the phenomenon. The following section reviews the mixed research results and analyzes some possible contributing factors.

3.4 Mixed Research Results

Although alternative teacher certification has been implemented for nearly 20 years, and there are an increasing number of studies that have been conducted, valid and reliable research on this area appears thin. For instance, Wilson, Floden & Ferrini-Mundy (2002) conducted a review of high-quality research concerning teacher preparation. They found 14 studies, out of the total of 57 that met all their criteria, related to the impact of alternative licensure, and only half of those studies involved comparisons between alternatively certified teachers in a specific alternative route and graduates of traditional teacher preparation programs. Even the limited literature rarely includes content descriptions, which makes it

difficult to ascertain real differences between alternative and traditional approaches. Thus they commented that a teaching credential is a “crude indicator” of professional preparation with little known about the critical and specific aspects of pedagogical preparation; that when certification status and degrees are used as indicators of teacher preparation in large scale research, there is no information about the significant aspects of the coursework taken for regular certification. Moreover, “this problem is exacerbated by the wide variation in certification practices across states” (p. 193). Some states treat all post-baccalaureate programs as alternative, whether they include pre-service coursework and students teaching or offer little structured training; some alternative routes have high entrance standards, and some require substantial coursework and mentoring (Post, Pugach, & Thurman, 2002).

Besides the multiple definitions of alternative and traditional certification, time frame for the data, and the complicated pattern of entry and retention in teaching, make it practically impossible to compare the statistics from different, even the same, data sources (Shen, 1998b). Even when these variables are relatively defined in one research study, there are almost always bifurcations regarding research findings, which makes this research field of alternative certification very unsettling. For example, based on an analysis of data collected during the Schools and Staffing Survey 1993-94, Shen (1998a) compared the characteristics of minority and white teachers certified through alternative routes, and those of traditionally certified. He found that, in comparison to traditional certification (TC), alternative certification (AC) recruits a significantly higher percentage of minority teachers and a higher percentage of White males. However, in terms of maturity of the candidates, “53% of AC White teachers and 44% of AC minority teachers are fresh college graduates. It appears that *many college graduates circumvent TC and enter teaching through AC*” (pp. 34-35, italics added). With reference to hard-to-staff subject areas, although more AC teachers (15% white and 14% minority) than TC teachers (9% white, 7% minority) teach math and science, “*many AC teachers who teach math and science do not have the necessary qualifications*” (p. 36, italics added). What is most disturbing is that “the percentage of AC minority teachers choosing to leave teaching or undecided whether to stay in teaching is the highest among all groups” (p. 37). The implication of the research results is that alternative teacher certification policies have not been found the means to solving the problems of out-of-field teaching, teacher leaving the profession, and the lack of maturity of college graduates, which have been plaguing the supply end of the teaching force, although they are seemingly promising to alleviate teacher shortages and to diversify the teacher pool.

Legler (2002, p. 4) summarized the inconsistent research results of alternative certification programs (ACPs) as follows:

Positive results	Negative results
<ul style="list-style-type: none"> ACPs can increase the number of minority teachers and increase the number of teachers in shortage areas. 	<ul style="list-style-type: none"> There is no increase in the retention rate of alternatively certified teachers in comparison to traditional

<ul style="list-style-type: none"> • The classroom performance and student outcomes of alternatively certified teachers can be similar to those of traditionally certified teachers in some programs. • Careful screening of applicants can contribute to intern quality. • Intensive mentoring and support can contribute to the development of alternatively certified teachers. 	<p>certification.</p> <ul style="list-style-type: none"> • Some AC teachers are unable to learn content knowledge “on the job”. • Some programs have allowed completely unqualified people to assume total responsibility for the classroom. • Some ACPs do not give adequate attention to curriculum development, pedagogical knowledge, and classroom management.
---	--

The positive and negative results of alternative certification programs listed above turn out to be “one man’s food, another man’s poison”. They entail assumptions about and prerequisites for effective practices that “*can*” work and lead to positive results, while in the meantime there are always “*some*” exceptions with negative results that almost cancel out the positive side. Hence, “it is not entirely clear how much is known about the components of an effective licensure program. ... There was little reliable evidence on the impact of this system. ... There is no concrete evidence backing the claim that teacher certification policies result in more qualified teachers” (Goldhaber & Brewer, 2000, p. 130). However, it is not surprising that most studies comparing alternative and traditional certifications conflict with each other given “the political context in which alternative certification has come about, the inherent difficulties of evaluating program outcomes, and low levels of investment in research on alternative certification” (Hawley, 1990, p. 3).

Hawley (1990) elaborated on the causes of the flaws in alternative certification research. They include

- sampling errors, where alternative certification teachers from a given district are compared with traditional certification teachers from a statewide or national sample, or from another jurisdiction different from the district being studied;
- limited sample size, where a small number of teachers are involved in the studies with the issue of representativeness questionable;
- logical fallacy, where research asserts that alternatively certified teachers with higher test scores or grade point average or better subject matter knowledge are attracted to alternative certification programs while the research is oblivious of, if not intentionally distorting, the fact that different requirements for entry result in different entrants;
- objectivity problem, where school principals and mentors must devote resources to support alternative certification teachers and in the meantime evaluate their teaching performance in comparison to that of traditional certification teachers;
- the lack of reliability and validity of assessments, where the instruments focus on low-yield variables of teaching, such as procedural skills, with the absence of a rich demonstration of teachers’ expertise;
- no distinction between programs, where whether the programs are university-based or organized by states or districts is not clear; thus there is no information about the differences in content and processes.

The mixed and inconclusive research results may be partly due to flaws in research design and methodology. Nevertheless, research is value-laden. How “the problem” is framed in teacher education not only determines definitions of terms used, procedures for data collection and selection, interpretations of results, and formulation of conclusions, and reflects our own biases based on our own values, beliefs and attitudes embedded in the whole research process, but also provides policy makers, who have their own biases, with a political lens to further their own agenda using the research results in the policy process (Earley, 2000). In addition, most studies of alternative certification programs tend to focus solely on the observable characteristics of the participants, such as age, race, gender, while little attention is given to the motives of the participants to become a teacher, and little is found about the process and curricula of the programs themselves. When large dataset is used to describe the general pattern quantitatively, what is covered up is the details about how certain constraints to program implementation were worked out. Few studies are conducted to follow up the graduates and seek their feedback to improve the forthcoming programs and benefit new participants. Moreover, a constantly ignored missing link in the research is the description of and attention given to demographic and socio-economic features of teaching contexts. It seems that it is taken for granted that urban schools are all “urban” in the same way, and “rural” schools share the same “rural” characteristics, without them being pronounced specifically at all. These unspoken and latent assumptions may be one, if not the most crucial one, factor that contributes to the criticisms of the validity and reliability of educational research, and the inevitable “mixed” results.

Conclusion

The debate will continue as teacher education reform in the United States is experiencing a state of flux and agitation. Teachers’ associations are concerned about the professionalization of teaching and advocate for more extensive regulation of teacher certification (Sullivan, 2001). State legislature exercises the power to affect who can be screened in and out of the teaching profession (Chappelle & Eubanks, 2001; Goldhaber & Brewer, 2000). Higher education institutions are criticized for teacher shortages and are under the pressure to improve teacher quality. Alternative certification policies can be a threat to their long-held status, but can also be an impetus for and an opportunity of teacher education reform. Local education agencies push for new pipelines that will increase and diversify the teacher pool, and fill vacancies in hard-to-staff localities and in hard-to-staff subject areas. All these voices are then fueled by mixed and limited research results on the legitimacy of alternative teacher certification. What is missing in the debate and in most of the research on alternative teacher certification programs are the contexts where alternative certification programs take place, evolve and are evaluated with reference to what it has claimed to achieve.

“In reality, ... neither traditionally nor alternatively certified teachers are prepared to meet the challenges of teaching in our most needy schools” (Zumwalt, 1996, p. 42). A prerequisite for meeting these challenges is a comprehensive qualitative review of the teaching and learning context, not only at the macro level, but at the micro level as well. The situative perspective is especially significant for policy makers, educators and researchers, given the rapid but uneven demographic and socio-economic changes of both the public school

teaching force and student population. A comprehensive understanding of the context and the implications of such a context for policymakers and educators is the basis for perspective transformation regarding approaches to teacher preparation, for a more desirable teacher preparation, recruitment and retention policy, and for more valid and reliable research results. A cohesive and context sensitive research agenda is therefore needed to systematically investigate different cohorts and to contribute to building a broader knowledge base for the alternative teacher certification phenomenon.

References

- Alexander, K. (1990). Rural education: Institutionalization of disadvantage. *Journal of Educational Finance*, 16(2), 121-129.
- American Association for Employment in Education (2003). Educator Supply and Demand in the United States, 2002 Research Report.
- American Association of School Administrators. (1999). *AASA online advocacy*. [Online]. Available: <http://www.aasa.org/Advocacy/advocacy.htm>.
- Ballou, D., & Podgursky, M. (1997). Reforming teacher training and recruitment. *Government Union Review*, 17(4), 1-47.
- Ballou, D., & Podgursky, M. (2000). Reforming teacher preparation and licensing: What is the evidence? *Teachers College Record*, 102(1), 5-27.
- Berry, B. (May 2001). No shortcuts to preparing good teachers. *Educational Leadership*, 32-36.
- Bliss, T. (1990). Alternative certification in Connecticut: Reshaping the profession. *Peabody Journal of Education*, 67(3), 55-83.
- Bradshaw, L. K. (1998). *Policy, politics, and contradictions of alternative teacher certification*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April 1998.
- Chappelle, N., & Eubanks, S. (2001). Defining alternative certification and nontraditional routes to teaching: Similarities, differences and standards of quality. *Teaching and Change*, 8(4), 307-316.
- Cochran-Smith, M., & Fries, M. K. (2001). Sticks, stones, and ideology: The discourse of reform in teacher education. *Educational Researcher*, 30(8), 3-15.
- Coldron, J., & Smith, R. (1999). Active location in teachers' construction of their professional identities. *Curriculum Studies*, 31(6), 711-726.
- Cunningham, C. (2003). Trends and Issues: social and economic context. ED 476550.
- Darling-Hammond, L. (1990). Teaching and knowledge: policy issues posed by alternate certification for teachers. *Peabody Journal of Education*, 67(3), 123-154.
- Darling-Hammond, L. (1999). *Solving the dilemmas of teacher supply, demand, and standards*. New York: National Commission on Teaching and America's Future.
- Darling-Hammond, L. (2000a). How teacher education matters. *Journal of Teacher Education*, 51(3), 166-173.
- Darling-Hammond, L. (2000b). Reforming teacher preparation and licensing: Debating the evidence. *Teachers College Record*, 102(1), 28-56.
- Darling-Hammond, L. (2000c). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1). [Online]. Available: <http://epaa.asu.edu/epaa/v8n1>.
- Darling-Hammond, L., & Sykes, G. (2003). *Wanted: A national teacher supply policy for education: The right way to meet the "highly qualified teacher" challenge*. [Online]. Available: <http://epss.asu.edu/epaa/v11n33>.
- Dixon, P., & Ishler, R. E. (1992). Acceptable approaches to alternative certification. *Teacher Education and Practice*, 8(1), 29-35.
- Earley, P. (2000). Finding the culprit: Federal policy and teacher education. *Educational Policy*, 14(1), 25-39.
- Ehrenberg, R., Goldhaber, D., & Brewer, D. (1995). Do teachers' race, gender, and ethnicity

- matter? Evidence from the National Educational Longitudinal study of 1988. *Industrial & Labor Relations Review*, 48 (3). P. 547-561.
- Engel, M. (2000). *The struggle for control of public education: Market ideology vs. democratic values*. Philadelphia, PA: Temple University Press.
- Feistritzer, C. E. (1997). *Alternative Certification: A state-by-state analysis, 1997*. Washington, DC: National Center for Education Information.
- Feistritzer, C. E. (2000). Teacher quality and alternative certification programs. Presentation to House Committee on Education and the Workforce Subcommittee on Postsecondary Education, Training and Lifelong Learning, Washington, DC.
- Feistritzer, C. E., & Chester, D. T. (2002). *Alternative Teacher Certification: A State by State Analysis 2002*. National Center for Education Information.
- Fenstermacher, G. D. (1990). The place of alternate certification in the education of teachers. *Peabody Journal of Education*, 67(3), 3-34.
- Follo, E., Hoerr, B., & Vorheis-Saregent, A. (2002). Where will urban high school teachers for the 21st century come from? *American Secondary Education*, 30(3). 2-20.
- Fox, J. E., & Certo, J. (1999). Recruiting and retaining teachers: A review of the literature. Metropolitan Educational Research Consortium.
- Gay, G. (2002). Preparing for culturally responsive teaching. *Journal of Teacher Education*, 53(2), 106-116.
- Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129-145.
- Gordon, J. A. (1994). Why students of color are not entering teaching: Reflections from minority teachers. *Journal of Teacher Education*, 45(5), 346-353.
- Grant, C. A. (1989). Urban teachers: Their new colleagues and curriculum. *Phi Delta Kappan*, 70(19), 251-271.
- Haberman, M. (1992). Alternative certification: Can the problem of urban education be resolved by traditional teacher education? *Teacher Education and Practice*, 8(1). 13-27.
- Hargreaves, A. & M. Fullan. (eds.) (1992). *Understanding Teacher Development*. London: Cassell.
- Harry, B. Kalyanpur, M., & Day, M. (1999). *Building Cultural Reciprocity with families: Cases Studies in special education*. Baltimore, MD: Paul H. Brookes Publishing.
- Hawley, W. D. (1990). The theory and practice of alternative certification: Implications for the improvement of teaching. *Peabody Journal of Education*, 67(3), 3-34.
- Hodgkinson, H. (2002). Demographics and teacher education. *Journal of Teacher Education*, 53(2), 102-105.
- Holmes, B. J. (2001). Understanding Pros and cons of alternative routes to teacher certification. *Teaching and Change*, 8(4), 317-330.
- Howard, G. (1999). *We can't teach what we don't know: White teachers, Multiracial schools*. New York: Teachers College Press.
- Huling-Austin, L. (1986). Factors to consider in alternative certification programs: What can be learned from teacher induction research? *Action in Teacher Education*, 8(2), 51-58.
- Ingersoll, R. M. (1996). *Teacher quality and Inequality*. Proceedings of the American Statistical Association. Paper presented at the Annual Meeting of the American Statistical Association. Washington, DC: of Educational Research and Improvement. ED 415230).
- Ingersoll, R. (2001). *Teacher turnover, teacher shortages, and the organization of schools*.

- Seattle, WA: Center for Policy and Teaching, University of Washington.
- Ingersoll, R. M. (2002). *The teacher shortage: A case of wrong diagnosis and wrong prescription*. [Online]. Available: http://www.nassp.org/news/bltn_teachshort0602.html
- Ingersoll, R. M. (2003). Is there a shortage among mathematics and science teachers? *Science Educator*, 12(1), 1-9.
- Kelchtermans, G., & Vandenberghe, R. (1994). Teachers' professional development: A biographical perspective. *Journal of Curriculum Studies*, 26(1), 45-62.
- Labaree, D. (1997). Public goods, private goods: The American struggle over educational goals. *American Educational Research Journal*, 34(1), 39-81.
- Legler, R. (2002 Nov.). The impact of alternative certification in the Midwest. *NCREL policy Issues*, 12.2A-17.
- Lemke, J. C. (1994). *Teacher induction in rural and small school districts*. ED 369 589.
- Marchant, G. J. (1992). Knowledge, expertise, and alternative teacher certification. *Teacher Education and Practice*, 8(1), 37-43.
- McDiarmid, G. W., Larson, E., & Hill A. (2002). Retaining Quality Teachers for Alaska. ED 474247.
- Menlove, R. (2003). Rural students becoming rural teachers: How long do they stay? ED 476213.
- Morey, A. I., Bezuk, N., & Chiero, R. (1997). Preservice teacher preparation in the United States. *Peabody Journal of Education*, 72(1), 4-24.
- Murphy, P. J., & Angelski, K. (1996/1997). Rural teacher mobility: A report from British Columbia. *Rural Educator*, 18(2), 5-11.
- National Center for Education Statistics. (2004). *Projections of Education Statistics to 2013*. (32nd Edition). [On-line]. <http://nces.ed.gov/pubs2004/2004013a.pdf>
- National Education Association. (2002, 2003). *Great public schools for every child*. [Online]. Available: www.nea.org.
- Newmann, R. A. (1994). Reconsidering emergency teaching certificates and alternative certification programs as responses to teacher shortages. *Urban Education*, 29(1), 89-108.
- Oakes, J., Franke, M. L., Quartz, K. H., & Rogers, J. (2002). Research for high-quality urban teaching: Defining it, developing it, assessing it. *Journal of Teacher Education*, 53(3), 228-234.
- Oliver, B., & McKibbin, M. (1985). Teacher Trainees: Alternative Credentialing. *California Journal of Teacher Education*, 36(3), 20-23.
- Post, L. Pugach, M., Hains, A., & Thurman, A. (2002). Multiple points of entry into teaching. ED 477727.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4-15.
- Roth, R. A. (1986). Alternate and alternative certification: Purposes, assumptions, implications. *Action in Teacher Education*, 8(2), 1-6.
- Shen, J. (1997). Has the alternative certification policy materialized its promise? A comparison between traditionally and traditionally certified teachers in public schools. *Educational Evaluation and Policy Analysis*, 19(3), 276-283.
- Shen, J. (1998a). Alternative certification, minority teachers, and urban education. *Education and Urban Society*, 31(1), 30-41.
- Shen, J. (1998b). The impact of alternative certification on the elementary and secondary public teaching force. *Journal of Research and Development in Education*, 31(1), 9-16.

- Shen, J. (1998c). Alternative Certification: A complicated research topic. *Educational Evaluation and Policy Analysis*, 20(4), 316-319.
- Stone, D. (1990). Recruiting and retaining teachers in rural schools. ED 328 383.
- Su, J.Z. (1996). Why teach: Profiles of entry perspectives of minority students as becoming teachers. *Journal of Research and Development*, 29(3), 177-233.
- Sullivan, C. C. (2001). Into the Classroom: Teacher Preparation, Licensure, and Recruitment. ED 460109.
- The Thomas B. Fordham Foundation. (1999, July). The teachers we need and how to get more of them: A manifesto. *Better Teachers, Better Schools*. Washington, DC: Author.
- Tom, A. R. (1987). Replacing pedagogical knowledge with pedagogical questions. In Smyth, J. (ed.) 1987. *Educating Teachers; Changing the Nature of Pedagogical Knowledge*. East Sussex: Falmer Press.
- Tom, A. R. (2000). Teacher Education reform in the United States: Thrust, assumptions and implementations. ED 438262.
- Villegas, A. M., & Lucas, T. (2002). *Educating Culturally Responsive Teachers: A Coherent Approach*. Albany, NY: SUNY Press.
- Wallace, M. J. (1991). *Training Foreign Language Teachers*. Cambridge: Cambridge University Press.
- Williams, K. D. (1997). Social ostracism. In R. M. Kowalski (Ed.), *Aversive interpersonal behaviors* (pp. 133-170). New York: Plenum.
- Wilson, S. M., Floden, R. E., & Ferrini-Mundy, J. (2002). Teacher Preparation Research: An insider's view from the outside. *Journal of Teacher Education*, 53(3). 190-204.
- Wise, A. (1994, Winter). Choosing between professionalism and amateurism. *The Educational Forum*, 58 (2), 139-146.
- Zumwalt, K. (1996). Simple answers: Alternative teacher certification. *Educational Researcher*, 25(8), 40-42.

Appendix CLASSIFICATION OF ALTERNATIVE ROUTES

NCEI, for the sake of consistency in reporting and analyzing what is going on in the field of alternative teacher certification, has developed the following classification system, for categorizing the “alternative routes” to the approved college teacher education program route for certifying teachers submitted by the states.

CLASS A: is the category reserved for those programs that meet the following criteria:

- The program has been designed for the explicit purpose of attracting talented individuals who already have at least a bachelor’s degree in a field other than education into elementary and secondary school teaching.
- The program is not restricted to shortages, secondary grade levels or subject areas.
- The alternative teacher certification programs in these states involve teaching with a trained mentor, and formal instruction that deals with the theory and practice of teaching during the school year – and sometimes in the summer before and/or after.

CLASS B: Teacher certification routes that have been designed specifically to bring talented individuals who already have at least a bachelor’s degree into teaching. These programs involve specially designed mentoring and formal instruction. However, these states either restrict the program to shortages and/or secondary grade levels and/or subject areas.

CLASS C: These routes entail review of academic and professional background, transcript analysis. They involve specially (individually) designed inservice and course-taking necessary to reach competencies required for certification, if applicable. The state and/or local school district have major responsibility for program design.

CLASS D: These routes entail review of academic and professional background, transcript analysis. They involve specially (individually) designed inservice and course-taking necessary to reach competencies required for certification, if applicable. An institution of higher education has major responsibilities for program design.

CLASS E: These post-baccalaureate programs are based at an institution of higher education.

CLASS F: These programs are basically emergency routes. The prospective teacher is issued some type of emergency certificate or waiver which allows the individual to teach, usually without any on-site support or supervision, while taking the traditional teacher education courses requisite for full certification.

CLASS G: Programs in this class are for persons who have few requirements left to fulfill before becoming certified through the traditional approved college teacher education program route, e.g., persons certified in one state moving to another; persons certified in one endorsement area seeking to become certified in another.

CLASS H: This class includes those routes that enable a person who has some “special” qualification, such as a well-known author or Nobel prize winner, to teach certain subjects.

CLASS I: These states reported in 1999 that they were not implementing alternatives to the approved college teacher education program route for licensing teachers.

CLASS J: These programs are designed to eliminate emergency routes. They prepare individuals who do not meet basic requirement to become qualified to enter an alternate route or a traditional route for teacher licensing.

CLASS K: These programs grant licenses to teachers based on passage of qualifying test(s).